AMENDMENTS TO THE DRAWINGS

The attached sheet of drawings includes changes to Fig. 3. This sheet which includes Fig 3–4, replaces the original sheet including Fig. 3–4, and is titled "10/823,950 REPLACEMENT SHEET." In Fig. 2, previously omitted element 28 has been added, and reference number 42 is now clearly readable.

REMARKS/ARGUMENTS

The specification and drawings have been corrected. The paragraph in the specification now conforms to the table and the other paragraphs of the specification.

Claims 1–14 and 16–18 are rejected under 35 U.S.C. 102(a or e) as anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over Mason et al WO 03/078734.

Mason et al describes a coating for paper which can be two or three elements. These elements are mixed separately before being mixed together.

The first element is a carrier fraction. The carrier fraction comprises plate-like pigment particles and at least one binder.

The plate-like particles can be mineral particles, such as silicate particles, mica particles, kaolin particles, bentonite particles, alumina trihydrate particles, phyllosilicate particles, such as talc particles or organic pigment particles, such as plastic pigment particles. The plate-like particles detain the nanoparticles on the surface layer of the paper being treated. The plate-like particles are large enough to block the spaces between fibers in the paper, reducing the paper porosity and the absorption of nanoparticles in the base paper. It is suggested that the interaction between the plate-like particles and the nanoparticles can be mechanical, physical, chemical or electrical.

The binder can be a polymer latex such as styrene butadiene, acrylate, styrene acrylate or polyvinyl acetate latex or a mixture of these. It can also be a water soluble binder, either a derivative of natural polymers such as starch, protein, carboxymethyl cellulose or other cellulose derivative, or a fully synthetic polymer, such as polyvinyl alcohol, or a mixture of different water-soluble binders. The binder is usually under 60% of the carrier fraction but can be from 5 to 75% of the carrier fraction.

In example 1 the carrier fraction was 64.4% talc granulates, 34.8% styrene-butadiene latex, 0.5% antifoaming agent and 0.3% dispersing agent. After mixing the solids content was adjusted to 45% with water.

In example 2 the carrier fraction was 67.5% talc slurry having a 60% solids content, 30% styrene-acrylate latex, 2% plasticizing agent, 0.4% antifoaming agent and 0.1% dispersing agent. After mixing the solids content was adjusted to 55% with water.

In example 3 the carrier fraction was 20% kaolin, 65% polyvinyl alcohol, 10% carboxymethyl cellulose and 5% hardening agent. After mixing the solids content was adjusted to 15%.

The second element is the nanoparticle fraction.

The nanoparticle fraction contains the nanoparticles in a water water slurry. The dry matter content of the slurry is from 10-20% of the slurry. The nanoparticles mentioned are

synthetic silica particles, such as colloidal synthetic layered silicates, or precipitated calcium carbonate nanoparticles or other corresponding nanoparticles.

In example 1 the nanoparticle fraction has synthetic silicate nanoparticles and has a solids content of 15%.

In example 2 the nanoparticle fraction has synthetic silicate nanoparticles and has a solids content of 10%.

In example 3 the nanoparticle fraction has synthetic silicate nanoparticles and has a solids content of 18%.

The third element, which appears to be optional, is a surface sizing fraction comprising a water-soluble main component, such as starch, polyvinyl alcohol, carboxymethyl cellulose, glucomannan, protein or a mixture of these.

Each of the fractions is mixed separately and then the fractions are combined.

In example 1 the carrier fraction and the nanoparticle fraction are mixed in a 50/50 ratio of carrier fraction to nanoparticle fraction, and adjusted to a 20% solids content with water. The combined fraction is then added to the surface sizing fraction, a starch solution having a 15% solids content, in a 50/50 ratio of the combined fraction to the surface sizing fracion..

In example 2 the carrier fraction and the nanoparticle fraction are mixed in a 70/30 ratio of carrier fraction to nanoparticle fraction and the solids content adjusted to 20% solids with water. The combined fraction is then added to the surface sizing fraction, a polyvinyl alcohol solution having a 20% solids content, in a 20/80 ratio of the combined fraction to the surface sizing fraction.

In example 3 the carrier fraction and the nanoparticle fraction are mixed in a 97/3 ratio of carrier fraction to nanoparticle fraction and the solids content adjusted to 15% with water. There was no surface sizing fraction.

Comparative examples 1 – 3 were provided to illustrate the need of mixing the fractions separately before combining the fraction. The amounts in comparative example 1 were the same as the amounts in example 1; the amounts in comparative example 2 were the same as in example 2 and the amounts in comparative example 3 were the same as in example 3. The only difference in each of the comparative examples was the individual elements of the carrier fraction were added separately to the nanoparticle fraction.

Table 1 shows that the comparative example had a lower, and in some cases a substantially lower, count of nanoparticle specific ions of the synthetic silicate nanoparticles than its corresponding example.

A further example, the 2^{nd} paragraph on page 11, was used to show that the carrier fraction and the carrier elements were required. In the example without carrier, examples 1 and 2 were repeated but the carrier fraction was not used. As table 1 shows almost no nanoparticle specific ions of the synthetic silicate nanoparticles were detected.

From these examples, Mason et al conclude that the carrier fraction having mineral particles, phyllosilicate particles, or organic pigment particles, as well as a binder is required in order to hold the nanoparticles on the surface and be useful in ink jet printing. They conclude that nonoparticles without the carrier fraction is not useful, and, in fact, does not work.

Mason et al also conclude that for best results the carrier fraction and the nanoparticle fraction should be mixed separately and then combined. The combination may be (1) with each other with the mixture being applied to the substrate, (2) with each other and the mixture being added to the surface sizing fraction, and the total mixture being applied to the substrate, or (3) each of the fractions being added separately to the surface sizing fraction, and the total mixture being applied to the substrate.

Mason et al require that there be two particulate substances, the particulate material in the carrier fraction and the particulate material in the nanoparticle fraction. Mason et al require a particular kind of particulate material in the carrier fraction. It must be plate-like. It must be with a binder material.

It is not a teaching of placing calcium carbonate having a maximum mean average size of 200 nm. on the web in the absence of other supporting particles as required by claims 1–18.

Claim 15 has been rejected under 35 U.S.C. 103(a) as unpatentable over Mason et al in view of Tokiyoshi et al 5,418,057. Tokiyoshi has been cited for spray coating. The combination of Mason et al and Tokiyoshi does not teach placing calcium carbonate having a maximum mean average size of 200 nm. on the web in the absence of other supporting particles as required by claim 15.

The provisional double patenting rejection is noted and will be addressed when one of the applications is noted as allowable. It is understood that it will become an issue when the double patenting rejection is the only rejection remaining in the application.

Related cases

There are several related applications before the Examiner. These are 10/823,950 "Paper products and methods of making" filed April 13, 2004, and being a continuation-in-part of applications 10/744,926 and 10/744,861 both filed December 22, 2003; 10/823,952 "Paper products and methods of making" filed April 13, 2004, and being a continuation-in-

part of applications 10/744,926 and 10/744,861 both filed December 22, 2003; 10/824,221 "Paper products and methods of making" filed April 14, 2004, and being a continuation-in-part of applications 10/744,926 and 10/744,861 both filed December 22, 2003; 11/155,411 "Paper products and methods of making" filed June 17, 2005 and being a continuation-in-part of application 10/823,950 filed April 13, 2004 which is a continuation-in-part of applications 10/744,926 and 10/744,861 both filed December 22, 2003; 11/155,412 "Paper products and methods of making" filed June 17, 2005, and being a continuation-in-part of application 10/823,952 filed April 13, 2004 which is a continuation-in-part of applications 10/744,926 and 10/744,861 both filed December 22, 2003; and 11/155,455 "Paper products and methods of making" filed June 17, 2005 and being a continuation-in-part of application 10/824,221 filed April 14, 2004 which is a continuation-in-part of applications 10/744,926 and 10/744,861 both filed December 22, 2003.

Applicant wishes to call to Examiner's attention 3 other patent applications. These are 11/158,850 "Method of making a barrier material"; 11/158,950 "Oxygen barrier material"; and 11/159,066 "Barrier material". All were filed June 21, 2005 and are in Art Unit 2811.

CONCLUSION

It is respectfully requested that the rejection of the claims as being anticipated by Mason et al or by Mason et al in view of Tokiyoshi et al be withdrawn.

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